

AMELICHLOA: A NEW GENUS IN THE STIPEAE (POACEAE)

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ABSTRACT

A new genus of *Stipeae* (Poaceae), **Amelichloa**, is described. It differs from other genera in the tribe in the woody, sharp tips of its basal leaves, the presence of smooth longitudinal ribs on its caryopses, its persistent stilar bases and in the frequent presence of cleistogamous panicles in the axils of its basal leaf sheaths. There are five species in the genus: **A. ambigua**, **A. brachychaeta**, **A. brevipes**, **A. caudata**, and **A. clandestina**. The first four species are native to South America; **A. clandestina** is native to northern Mexico. A key to the species is provided. Three of them, *A. brachychaeta*, *A. caudata*, and *A. clandestina*, have become established in disturbed areas on other continents. The name honors Dr. María Amelia Torres.

RESUMEN

Se describe **Amelichloa**, un nuevo género para la tribu *Stipeae* (Poaceae). El mismo difiere de otros géneros de la tribu por presentar ápices de las hojas basales punzantes y muy resistentes; suaves líneas longitudinales en la superficie del cariopse y bases estilares persistentes, así como en la frecuente presencia de cleistógenos en las axilas de las hojas basales. El género se encuentra constituido por cinco especies: **A. ambigua**, **A. brachychaeta**, **A. brevipes**, **A. caudata** y **A. clandestina**. Las cuatro primeras nativas de Sudamérica; **A. clandestina** del norte de México. Se incluye una clave para especies. Tres de las especies *A. brachychaeta*, *A. caudata* y *A. clandestina* se han establecido en áreas disturbadas de otros continentes. Se dedica este género a la Dra. María Amelia Torres.

This paper arises from the need to determine the appropriate generic treatment of three grass species introduced in the United States. In traditional generic treatments they are known as *Stipa brachychaeta*, *S. caudata*, and *S. clandestina*. All three have names in *Achnatherum* (Barkworth 1993; Jacobs & Everett 1996). The first two have, in addition, names in *Jarava* (Peñailillo 2002). Soreng et al. (2003) treated *S. brachychaeta* and *S. caudata* as species of *Jarava* and *S. clandestina* as a species of *Achnatherum*.

We reviewed fresh material, herbarium samples and type specimens of all three species and became convinced that, not only do they all belong to the same genus, but that they do not belong to any currently recognized genus. In this paper, we present the new genus, explain how it differs from other American genera, list the species that it includes, and provide a key to the species.

Etymology.—We are naming the new genus *Amelichloa* in honor of Dr. María Amelia Torres who has generously shared with us her extensive knowledge of South American *Stipeae*.

Amelichloa Arriaga & Barkworth, gen. nov. TYPE: *Amelichloa ambigua* (Speg.) Arriaga & Barkworth (*Stipa ambigua* Speg.).

Species *Amelichloae* differunt a speciebus generum aliorum Stipearum laminis apicibus rigidissimis et acutissimis, et caryopsidibus basibus stylorum persistentibus et paginis una dorsali et duobus costis lateralibus rasilibus et longitudinalibus, et saepius paniculis cleistogamis in axillis foliorum basalium quam inter species alias in tribu pro parte maxima.

Plants perennial, caespitose. **Culms** erect, with 2–3 nodes. **Leaves** mostly basal; **sheaths** open, smooth, glabrous; **auricles** absent; **ligules** scarious, rounded to acute; **blades** stiff, involute, apices very stiff, sharply pointed. **Inflorescences** paniculate, main panicle terminal, apparently wholly chasmogamous, reduced cleistogamous panicles often present axillary to the basal leaf sheaths. **Spikelets of terminal panicles** with 1 floret, disarticulating above the glumes and below the floret. **Glumes** exceeding the floret, acute to acuminate, 1–5-veined; **anthoecia** fusiform, terete; **calluses** antrorsely strigose, blunt; **lemmas** pubescent, often more densely and/or more persistently so over the midvein and lateral veins, hairs on the lower portion about 0.7–2 mm long, hairs on the distal portion often longer; **crown** not developed; **awns** 1–2-geniculate, scabrous, persistent; **lodicules** 3; **stamens** 3, anthers sometimes all of equal size and more than 2 mm long, sometimes 1 more than 2 mm long and 2 much shorter, sometimes all short; **ovaries** glabrous, style with 2 branches, united at the base, stigmas plumose. **Caryopses** fusiform, with 3 smooth, longitudinal ribs at maturity, stylar bases 1–2 mm long, persistent, sometimes eccentric; **hila** linear, about as long as the caryopses. **Spikelets of axillary panicles** 0.5–1 mm long, glumes thin, shorter than the florets, florets unawned or with reduced awns. $x = 11$?

Amelichloa includes five species, four of which are South American. The fifth species, *A. clandestina*, grows in northern Mexico. Some species have also become established in other parts of the world. The short anthers are probably associated with cleistogamy. A similar variation in anther length is also found in the primarily South American genus *Nassella*. In *N. leucotricha* (Trin. & Rupr.) R.W. Pohl, the proportion of florets with the different combinations varies in response to environmental conditions.

Cattle avoid the species of *Amelichloa* because of the pointed leaves. The frequent presence of cleistogenes also favors establishment of the species in areas that are grazed or mown. The combination of the sharp leaves and cleistogenes means that members of the genus could become serious problems in rangelands.

The only chromosome count that has been made for the genus is of $2n = 44$ for *Amelichloa brachychaeta* (Bowden and Senn 1962). None of the species has been included in any molecular studies. We shall be initiating a study that includes some species of *Amelichloa*, plus many other South American taxa, in summer, 2006.

1. Hairs at the top of the lemmas 4–5 mm long, numerous _____ **A. ambigua**
1. Hairs at the top of the lemmas up to 2.5 mm, long, sparse.
2. Awns 27–30 mm; florets 7–9.8 mm _____ **A. brevipes**
2. Awns 10–25 mm; florets 4–8 mm.
3. Mature caryopses with inclined, eccentric stylar bases; lemmas glabrous between the midvein and the lateral vein, even at the base, usually also glabrous between the lateral vein and the marginal vein _____ **A. caudata**
3. Mature caryopses with erect, usually centric stylar bases; lemmas pubescent between the lateral and marginal veins on the lower 1/2, usually also between the midvein and lateral veins.
4. Florets 4–5.5 mm long; awns usually 1-geniculate _____ **A. brachychaeta**
4. Florets 5.5–8 mm long; awns usually 2-geniculate _____ **A. clandestina**

Amelichloa ambigua (Speg.) Arriaga & Barkworth, comb. nov. BASIONYM: *Stipa ambigua* Speg., April 1925. Revista Argent. Bot. 1:27.

Jarava ambigua (Speg.) Peñailillo, Gayana, Bot. 59:30. 2002. TYPE: ARGENTINA: PROV. BUENOS AIRES: Pdo. Gral. Pinto, "in pratis circa Estación Iriate," 24 Nov 1905, *Spegazzini s.n.* (HOLOTYPE: LP ex LPS-2412!; ISOTYPE: BAA-2946 (col. Typus!)).

Stipa dusenii Hitchc., Contr. U.S. Natl. Herb. 24:271. 1925. TYPE: ARGENTINA: BUENOS AIRES: plains, Sierra de la Ventana., 29 Nov 1904, *P. Dusén s.n.* (HOLOTYPE: US-1161165; PARATYPE: BAA-3038 ex Herb. *Parodi* 5054 (col. Typus!)).

Distribution.—Argentina and Uruguay (Rosengurtt et al. 1970; Zuloaga et al. 1994; Torres 1993, 1997), introduced to France (Verloove 2005).

Amelichloa brachychaeta (Godr.) Arriaga & Barkworth, comb. nov. BASIONYM: *Stipa brachychaeta* Godr., Mém. Sect. Sci. Acad. Sci. Montpellier 1:450. 1853.

Nassella brachychaeta (Godr.) Barkworth, Taxon 39:609. 1990. *Achnatherum brachychaetum* (Godr.) Barkworth, Phytologia 74:6. 1993. *Jarava brachychaeta* (Godr.) Peñailillo, Gayana, Bot. 59:30. 2002. TYPE: FRANCE: du Port Juvenal cultivé au Jardin Botanique, Patria ignota, "plantes étrangère-an, Port Juvenal. *Anon. legit*, 22 May 1848 (HOLOTYPE (probable): MPU; OM: BAA-2979, hojas a & b! (col. typus, fragm. de un probable ejemplar tipo).

Stipa eminens fo. *viridis* Kuntze, Revis. Gen. Pl. 3:371. 1898. TYPE: ARGENTINA. SANTA FE: Ceres, Oct 1892, *Kuntze s.n.* (HOLOTYPE: NY; ISOTYPE: CORD; LP!).

Stipa lorentziana Griseb., Symb. Fl. Argent. 298–299. 1879. TYPE: ARGENTINA: Córdoba, *P.G. Lorentz* 46,187? (HOLOTYPE: GOET; ISOTYPE: CORD, US 866090! (fragm. ex GOET)).

Distribution.—Argentina, Chile, Perú and Uruguay (Matthei 1965; Rosengurtt et al. 1970; Zuloaga et al. 1994; Torres 1993, 1997). Although Tovar (1993) and Brako and Zarucchi (1993) do not mention it, the presence of this species in Perú is cited in Caro and Sánchez (1971), Torres (1997), and Verloove (2005). Introduced to the U.S.A., Australia (Jacobs & Everett 1993), France, and Spain (Verloove 2005).

Amelichloa brevipes (E. Desv.) Arriaga & Barkworth, comb. nov. BASIONYM: *Stipa brevipes* E. Desv., Fl. Chil. 6:282. 1854.

Jarava brevipes (E.Desv.) Peñailillo, Gayana, Bot. 59:30. 2002. TYPE: CHILE: en las provincias centrales de la República, *C. Gay* 1106. *s.d.* (HOLOTYPE: P; ISOTYPE: BAA! (col. typus fragm.), US 866138 (fragm.)).

Stipa hirtiflora Hack. in Dusén, Ark. Bot. 7:5, t.3, (f.7), t.7, (f. 4–5). 1908. TYPE: ARGENTINA. SANTA CRUZ: Arroyo Pelque, Jan 1905, *P. Dusén* 5640 (HOLOTYPE: W; ISOTYPE: US 1161168, 3168627 (fragm.)).

Distribution.—Argentina (Roig in Correa 1978; Torres 1993; Zuloaga et al. 1994), Chile (Matthei 1965).

Amelichloa caudata (Trin.) Arriaga & Barkworth, comb. nov. BASIONYM: *Stipa caudata* Trin., Mém. Acad. Imp. Sci. St.-Pétersbourg, Sér. 6, Sci. Math. 1:75. 1830.

Achnatherum caudatum (Trin.) S.W.L. Jacobs & J. Everett, *Telopea* 6:582. 1996. *Jarava caudata* (Trin.) Peñailillo, *Gayana, Bot.* 59:30–31. 2002. TYPE: Specimena Chilensia, *J. Lindley* s.n. (HOLOTYPE: LE-TRIN 1392.01 (& fig.); ISOTYPE: BAA 3001! (col. typus fragm.), US 2489479 (fragm.)).

Stipa bertrandii Phil., *Linnaea* 33(3–4):283. 1864. TYPE: CHILE: Andes de Santiago, *Bertrand* s.n. (HOLOTYPE: SGO-PHIL-102; ISOTYPE: BAA 2972! (col. typus fragm. ex holotype), SGO 62787, 63156; US 866140).

Stipa amphicarpa Phil., *Anales Mus Nac. Santiago de Chile* 11, lam.3, f.2. 1892. TYPE: CHILE: prope Angol, Dec 1887, *R.A. Philippi* (HOLOTYPE: SGO-PHIL 99, BAA 2952! (col. typus fragmento ex SGO); ISOTYPE: SGO 37393, 62793, US A866145).

Stipa litoralis Phil., *Anales Univ. Chile* 93:717. 1896. TYPE: CHILE: Isla Quiriquina, Mar 1880, *R.A. Philippi* s.n. (HOLOTYPE: SGO 62798; US 825120 (fragm. ex SGO)).

Distribution.—Argentina, Chile and Uruguay (Matthei 1965; Rosengurtt et al. 1970; Zuloaga et al. 1994; Torres 1993, 1997); introduced to Australia (Jacobs & Everett 1993), England, Italy, Spain (Verloove 2005), and U.S.A.

Amelichloa clandestina (Hack.) Arriaga & Barkworth, comb. nov. BASIONYM: *Stipa clandestina* Hack., *Repert. Spec. Nov. Regni Veg.* 8:516. 1910.

Achnatherum clandestinum (Hack.) Barkworth, *Phytologia* 74:6. 1993. TYPE: MÉXICO: COAHUILA: Saltillo, Mar 1908, *Arsène* 3441 (LECTOTYPE: W; ISOLECTOTYPE: MO 845904!; US 1030718, 3168628 (fragm. ex W). Lectotype designated by Hitchcock, *Contr. U.S. Natl. Herb.* 24:238. 1925.

Distribution.—México; introduced to U.S.A. Hitchcock (1925) included *Stipa pittieri* in *S. clandestina* and, as a result, included Colombia in the range of *S. clandestina*. The type of *S. pittieri* (US 531634!), however, belongs in *Nassella*, as is reflected in the combination *N. pittieri* (Hitchc.) Peñailillo (1998). Thus, it appears that *A. clandestina* is restricted to northern México.

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